REMARKS

In the Office Action dated October 24, 2002, claims 1-3 and 6-21 were rejected under 35 U.S.C. § 103 over U.S. Patent No. 6,289,334 (Reiner) in view of U.S. Patent No. 6,061,690 (Nori); and claims 4 and 5 were rejected under § 103 over Reiner in view of Nori and U.S. Patent No. 5,400,371 (Natarajan).

The present claims are allowable over the hypothetical combinations of references. First, it is respectfully submitted that it is improper to combine Reiner and Nori, as there is no suggestion and motivation to combine the references. Further, even assuming that the references can be properly combined, they do not teach or suggest elements recited in each of the independent claims.

Claim 1 recites a method that includes partitioning data for storage in a database system having plural data servers based on a characteristic associated with the data, storing the partitioned data in storage units associated with the plural data servers, and in response to a database query, selecting less than all the plural data servers based on the partitioning of the data to reduce a number of data servers involved in processing the database query. The recited combination of elements in claim 1 are not taught or suggested by the hypothetical combination of Reiner and Nori. Neither Reiner nor Nori mentions selection of less than all plural data servers based on partitioning of data to reduce a number of data servers involved in processing a database query.

Thus, even if Reiner and Nori can be properly combined, they do not teach recited elements of claim 1.

Similarly, with respect to independent claim 11, there is no teaching or suggestion in the asserted combination of Reiner and Nori of a database controller to receive partitioning information, to perform a partitioning task based on the partitioning information to partition the data into plural groups, and to select, in response to a database query, less than all plural data servers based on the partitioning information to reduce a number of data servers involved in processing the database query.

With respect to independent claim 19, there is no teaching or suggestion in the asserted combination of Reiner and Nori of partitioning data for storage in a database system based on a characteristic of data, and in response to a database query, select less than all data servers based on the information to reduce a number of data servers involved in processing the database query.

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In view of the foregoing, it is respectfully submitted that all independent claims are allowable. Dependent claims are allowable for at least the same reasons as corresponding independent claims.

Allowance of all claims is respectfully requested. The Commissioner is authorized to charge any additional fees, including extension of time fees, and/or credit any overpayment to Deposit Account No. 50-1673 (9261).

Respectfully submitted,
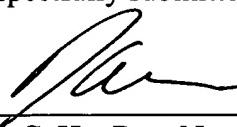
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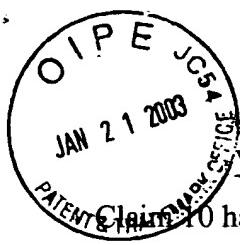
Claim 10 has been cancelled. New claims 22-31 have been added. Amend the following

claims as indicated (un-amended claims in smaller font):

1   1.   (Amended) A method, comprising:

2   receiving data [relating to]to be stored in a database system having plural

3   data servers;

4   receiving[, from the device,] information associated with at least one

5   characteristic of the data;

6   partitioning the data for storage in [a]the database system [having plural

7   data storage units] based on the characteristic associated with the data; and

8   storing the partitioned data in [one or more] storage units [of the database

9   system] associated with the plural data servers; and

10   in response to a database query, selecting less than all the plural data

11   servers based on the partitioning of the data to reduce a number of data servers involved

12   in processing the database query.

1   2.   (Amended) The method of claim 1, wherein receiving the information

2   comprises receiving the information from a client system[, the device comprising the

3   client system].

1   3.   The method of claim 1, wherein receiving the information comprises receiving at least

2   one of an average value of the data, a uniform distribution of the data, a minimum value of the data, and a

3   maximum value of the data.

1   4.   The method of claim 3, wherein partitioning the data comprises defining straight-line

2   segments based on at least one of the average value of the data, the uniform distribution of the data, the

3   minimum value of the data, and the maximum value of the data.

1   5.   The method of claim 4, wherein partitioning the data further comprises defining

2   breakpoints to provide the straight-line segments.

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1   6.   (Amended) The method of claim 1, wherein partitioning the data for

2   storage in the database system comprises dividing the data into [segments]buckets

3   containing related data.

1   7.   The method of claim 1, wherein partitioning the data comprises organizing the data into

2   related portions.

1   8.   The method of claim 7, wherein partitioning the data further comprises executing an

2   algorithm to organize the data.

1   9.   The method of claim 1, wherein storing the partitioned data in the database system

2   comprises storing the partitioned data in a relational database system.

1   11.   (Amended) [An apparatus] A system, comprising:

2   a database;

3   a network interface;

4   plural storage modules and data servers;

5   a database controller coupled to the database, wherein the database

6   controller is adapted to receive partitioning information and perform a partitioning task

7   on data received through the network interface based on the partitioning information to

8   partition the data into plural groups,

9   the database controller adapted to further store the plural groups of the

10 data [that is] partitioned by the partitioning task[, the partitioning task to identify one or

11 more portions of the database in which each segment of the partitioned data is stored]

12 into the plural storage modules associated with corresponding plural data servers,

13   the database controller adapted to select, in response to a database query,

14 less than all the plural data servers based on the partitioning information to reduce a

15 number of data servers involved in processing the database query.

1   12.   (Amended) The system of claim 11, wherein the database is part of a

2   parallel database system.

1   13.   The system of claim 11, wherein the database is a relational database.

1   14.   (Amended) The system of claim 11, wherein the database controller

2   comprises:

3   a query coordinator coupled to the network interface, the query

4   coordinator to receive the database query [requests] from the network interface;

5   a partitioner to partition data and perform selecting of less than all the

6   plural data servers [at least one of storing and locating partitioned data in the database in

7   response to the query requests]; and

8   a partitioner data storage coupled to the partitioner, the partitioner data

9   storage to store the partitioning information associated with at least one characteristic of

10   the data to enable the partitioner to partition data.

1   15.   (Amended) The system of claim 14, wherein the partitioner is capable of

2   executing an algorithm, based on the stored partitioning information, for partitioning the

3   data.

1   16.   (Amended) The system of claim 15, [further comprising a plurality of]

2   wherein the plural data servers are adapted to store and access partitioned data in the

3   database.

1   17.   The system of claim 11, further comprising a client system, wherein the client system

2   sends data to the database through the network interface.

1   18.   (Amended) The system of claim 17, wherein the client system is adapted

2   to further send the partitioning information [sends at least one characteristic of the data]

3   to be used by the database controller to partition the data.

1   19.   (Amended) An article comprising one or more storage media containing

2   instructions that when executed cause a device to:

3   receive information associated with at least one characteristic of data to be

4   stored into a database system from a remote device;

5   partition the data for storage in [a]the database system based on the

6   characteristic of the data; [and]

7   store the partitioned data in the database system in plural storage modules

8   associated with plural data servers; and

9   in response to a database query, select less than all the data servers based

10   on the information to reduce a number of data servers involved in processing the database

11   query.

1   20.   The article of claim 19, wherein the instructions when executed cause the device to

2   execute an algorithm to partition the data.

1   21.   The article of claim 19, wherein the instructions when executed cause the device to

2   divide the data into segments containing related data.

1   22.   (New) The method of claim 1, wherein receiving the information

2   comprises receiving organizational information, and wherein selecting less than all the

3   plural data servers is based on the organizational information.

1   23.   (New) The method of claim 22, wherein selecting less than all the plural

2   data servers is based on the organizational information and a characteristic of data

3   requested by the database query.

1   24.   (New) The method of claim 1, further comprising:

2   retrieving search results obtained by the selected data servers;

3   determining whether the search results are satisfactory; and

4   selecting at least one more data server to process the database query if the

5   search results are not satisfactory.

1   25.   (New) The method of claim 1, wherein partitioning the data comprises

2   partitioning the data into logical groups.

1   26.   (New) The method of claim 1, further comprising storing the information
2   by a partitioner, wherein selecting less than all the data select is performed at least in part
3   by the partitioner.

1   27.   (New) The system of claim 11, the database controller to select less than
2   all the plural data servers based on the partitioning information and a characteristic of
3   data requested by the database query.

1   28.   (New) The system of claim 11, wherein the selected data servers are
2   adapted to retrieve search results in response to the database query, and the database
3   controller is adapted to determine whether the search results are satisfactory and to select
4   at least one more data server to process the database query if the search results are not
5   satisfactory.

1   29.   (New) The article of claim 19, wherein the instructions when executed
2   cause the device to receive information comprising partitioning information.

1   30.   (New) The article of claim 29, wherein the instructions when executed
2   cause the device to select less than all the plural data servers based on the partitioning
3   information and a characteristic of data requested by the database query.

1   31.   (New) The article of claim 19, wherein the instructions when executed
2   cause the device to:
3   retrieve search results obtained by the selected data servers;
4   determine whether the search results are satisfactory; and
5   select at least one more data server to process the database query if the
6   search results are not satisfactory.